

The Canadian Entomologist.

VOL. XLIV. LONDON, DECEMBER, 1912.

No. 12

NEW SPECIES OF THE FAMILY IPIDÆ (COLEOPTERA).

BY J. M. SWAINE,

Assistant Entomologist for Forest Insects, Division of Entomology, Ottawa.*

An undescribed species of the genus *Trypophloeus* was recently received from Weymouth, N.S. Mr. G. E. Sanders, who collected the material, has found the species in the vicinity of Weymouth only, in dying stems and twigs of *Alnus*.

This species is closely related to *T. alni* Lind., of Russia, which breeds in the bark of *Alnus incana* but is distinguished by its shorter wing covers, coarsely punctured but not granulate hinder half of the pronotum, and unimpressed elytral striae.

Trypophloeus nitidus, n. sp.—Black (when matured); length, 2 mm.; width, $\frac{3}{4}$ mm.; clothed with short, inconspicuous, grey hairs of two lengths; pronotum small, from above subtriangular; elytra with rows of punctures, interspaces finely, confusedly punctured; the whole body shining.

The head is subglobular, punctured rather variably with coarse, very shallow punctures and faintly aciculate behind the eyes; the whole head often reticulate from very minute, dense, shallow punctures; the front more coarsely, closely, and rather roughly punctured. A median, longitudinal impression extends down the front and ends in a V-shaped impression at the base of the epistoma. The front is rather sparsely clothed with short, gray hairs. The epistoma, which bears a few long, yellowish hairs, is widely margined, shining and produced at the median line into a broad lobe, the upper surface of which is distinctly concave. The eyes are wide, coarsely granulated, slightly emarginate in front. The antennal fossa is small, rounded, and lies in the very short space between the eye and the base of the mandible. The antennal scape is strongly curved and clavate; the first segment of the funicle is large and pedunculate, the remaining four segments saucer-shaped and rapidly widened. The club is elongate, narrowed distally, and truncate, with three transverse sutures, of which the third is indistinct. The sutures are more densely hairy on the outer side, on the inner side the first suture is sometimes incomplete. The outer surface of the truncate tip bears a large, stout seta at each end.

*Contributions from the Division of Entomology, Ottawa.

The *pronotum* is subtriangular in outline; as wide as the elytra; with the base broadly rounded and finely margined; the hind angles broadly rounded; the sides sinuate, swollen behind, strongly convergent cephalad, and the apex not very narrowly rounded. The apical margin bears two larger recurved points on the median line, with two or three smaller ones on each side. The asperations of the front half of the pronotum are strong, wide, and more strongly compressed towards the centre and concentrically arranged. The caudal half of the pronotum is coarsely, densely punctured, with a few very fine punctures intermixed, but is not granulate. The hairs of the pronotum are short, fine, and point towards the summit.

The *scutellum* is triangular, distinct, not depressed, closely and coarsely punctate, and surrounded by a narrow, transversely rugose area.

The *elytra* are slightly over twice the length of the pronotum, 16.7, with the sides parallel as far as the level of the top of the declivity, then gradually rounded and narrowed to the narrowly rounded tip. The elytra are punctured in rows, the striae hardly impressed, with the interspaces confusedly punctured with very fine punctures and with a row of widely separated, slightly larger punctures which bear long, stout bristles. The punctures of the striae rows are round, small at the bottom, large at the surface, deeply impressed individually, so that the surface is somewhat transversely wrinkled. The pubescence is short on the disc, longer and more conspicuous on the sides and declivity. The interspaces bear each a row of longer, stout bristles, with minute, slender setae irregularly placed. The declivity is convex, with the striae distinctly impressed.

The front coxae are prominent and contiguous. The prosteronum is short, with a sharp, slender, intercoxal process. The metasternum is longitudinally sulcate on the median line. The hind coxae are very elongate and sharp-pointed distally. The foretibiae are strongly widened distally, the inner margin strongly sinuate, the outer margin straight on the distal half and finely serrate.

Can. Div. Ent. Col., No. 2087; Weymouth, N.S.; *Alnus incana*.

Dryocoetes pubescens, n. sp.—This species is represented in our collection from Colorado. It is allied to *affaber* Mannh., but is distinctly more elongate, with the elytra more densely and coarsely punctured on the declivity.

The front of the female is densely clothed with long yellow hairs, shorter at the centre; with a smooth median space extending over the vertex. The front in the male is rather roughly granulate-punctate, thinly clothed with long hairs, with a distinct, smooth median space extending from a moderate pit in the centre of the front caudad to the vertex, very narrow at first and wider behind.

The *pronotum* is much as in *affaber* Mannh., widest behind and narrower towards the front; the sides usually curved, but sometimes nearly straight for a short distance. The pronotum of both sexes is more distinctly granulate than in the male of *affaber*; the whole upper surface is strongly granulate. The prothorax is margined behind.

The *elytra* are very closely, deeply and coarsely punctured in rows. The striae are not impressed, and the punctures of the interspaces are as large and about as numerous as those of the striae. The punctures of the first interspaces are confused behind. The declivity has the first two striae impressed, as usual, but the suture is not raised, so that the declivity appears from above as quite distinctly flattened. The punctures of the declivity are coarse and very numerous. The densely and coarsely punctured declivity distinguishes this species from others described from North America.

The pronotum and elytra are rather densely clothed with long, erect, yellow hairs.

The type bears the labels; Col., Cornell U., lot 302, sub. 37. 189, type ♀.

Dryocoetes confusus, n. sp.—Length, $3\frac{1}{2}$ mm. Dark red to nearly black, front densely hairy, and elytral interspaces confusedly punctured; pubescence long, erect, straight, and rather dense on the pronotum and on the elytra.

The front of the female is almost entirely covered with a very dense, circular brush of short, yellow hairs, with the marginal hairs longer and thicker; a fine median carina is visible. The frontal hairs are very much denser than in *eichoffi* Hopk. The front of the male is densely, coarsely, roughly punctate and sparsely clothed with long hairs, with a shallow impression below and a fine medium carina above. The eyes are emarginate and the antennal club obliquely truncate as usual.

The *pronotum* is slightly longer than wide, widest behind the middle, about as wide as the elytra, gradually narrowed cephalad of the posterior third, broadly rounded in front and very broadly rounded behind. The entire surface is roughened, but the asperations are finer and closer behind the middle. The smooth median line is nearly obsolete. The pronotum is sparsely pubescent, with long hair on the sides and in front, and the disc nearly glabrous.

The *elytra* have the sides nearly parallel, slightly wider behind, with the declivity somewhat flattened from the depth of the first two striae. The striae of the disc and sides are hardly impressed except the sutural striae which are rather distinctly impressed,

and convergent towards the base. The stria punctures are moderate to rather coarse, close, and at times somewhat irregular towards the declivity. The interspaces are wide, with the punctures nearly as large as those of the striae, and irregular, except that the first three are uniseriately punctured towards the base. The interspaces are granulate on the declivity. The sutural interspaces are convex throughout. The elytra are rather densely pubescent, more noticeably so on the declivity.

Cornell University Collection; Colorado. The type bears the labels; Cornell U., no. 302, sub. 35, Col., 18, ♀.

Dryocoetes minutus, n. sp.—Length, $1\frac{3}{4}$ – $2\frac{1}{4}$ mm.; width, $\frac{2}{3}$ – $\frac{3}{4}$ mm.; a small slender species, nearly black, with legs and antennae lighter.

The front is densely granulate-punctuate, clothed with long, rather dense, yellow hair, less dense than in the female of *eichhoffi* Hopk. Probably one sex only is represented. There is a faint, traverse, linear impression across the middle of the front at the level of the upper part of the eyes, and a small, central, frontal tubercle. The eyes are slightly emarginate. The first segment of the antennal funicle is larger than usual, and the club truncate and strongly compressed.

The pronotum is distinctly longer than wide, with the hind margin very broadly rounded; the hind angles distinct; the sides nearly parallel from the base to beyond the middle, then regularly rounded in front; cephalic half punctured and rather coarsely asperate, caudal half coarsely punctured on the disc, punctures nearly as large as those of the elytral striae, and with minute asperations on the sides; rather densely clothed with short yellow hair, longer in front and very short on the disc.

The elytra are slender, much longer than the pronotum, with distinctly impressed striae of medium, close, rounded punctures; the sutural striae more strongly impressed, parallel, more closely punctured; the interspaces wider than the striae, flattened, rather sparsely, uniseriately punctured and pubescent, with the punctures smaller than those of the striae on the disc, but on the sides as large as those of the striae, and granulate towards the declivity. The declivity is convex, rapidly narrowed, compressed towards the apex, with the sutural striae deeply impressed and the sutural interspaces granulate; the other striae not impressed, and the striae and interstriae punctures equal, confused, and granulate. The pubescence is much denser on the declivity.

The fore tibiae are strongly widened distally, with four very long teeth on the distal half of the other margin.

Type from Colorado, in the Cornell University collection; lot 302, sub. 94, 130.

Ips pilifrons, n. sp.—Length, $4\frac{1}{2}$ -5mm.; width, $1\frac{1}{8}$ mm. Larger and stouter than *pini*, with the sutures more strongly angled, the elytral striae impressed, the elytral interspaces punctured, the front with a dense mass of short hairs, and the declivital armature of the *pini* type. Color, dark reddish to nearly black.

The front of the female is convex, granulate above and in front of the eyes, punctured on the sides, with a swollen area in front presenting a flat, oblique, anterior surface, which is covered with a circular, dense mass of short, yellow or brownish hairs. The front of the male has the pubescent area of the female replaced by a convex densely granulated area, moderately pubescent, with long yellowish hairs. The antennal club has the first suture bisinuate, the second sharply angled in front, not prolonged, the third suture angled but often indistinct, and the sutures strongly recurved at the sides.

The *pronotum* is shorter than the elytra, $2:2\frac{1}{2}$; longer than wide, $2:1\frac{2}{3}$; broadly rounded behind; slightly rounded on the sides, and gradually narrowed cephalad or subparallel for over three-fourths the length, then rapidly narrowed and rounded in front; with the disc rather coarsely roughened in front; coarsely and deeply punctured behind, but not very densely except on the sides, and clothed with light slender hairs on the sides and in front.

The scutellum is very small and distinctly channelled. The *elytra* are punctate-striate, with the striae distinctly impressed and wider on the disc; the punctures of the discal striae large, deep, subquadrate, and usually closely placed; the punctures of the lateral striae usually distinctly smaller than those of the disc, and near the lateral margin sometimes easily confused with those of the interspaces, which are there small, numerous, and irregular; the sutural striae deep, variably widened towards the declivity; the interspaces convex, with setigerous punctures, smaller than those of the striae, usually extending from the base to the declivity; the punctures of the first two interspaces rather closely placed; those of the third, fourth and fifth more distant, except near the declivity; the first two interspaces with granules which become much larger near the declivity, with smaller granules intermixed; the remaining interspaces from the sixth outward confusedly punctured and granulate at the declivital margin. The *declivity* is deeply excavated, coarsely and confusedly punctured, not pubescent, with the sutural interspaces raised and the elytra dehiscent at the tip. The declivital teeth are coarser than in *pini*, and the acute apical margin is usually more strongly produced. The elytra are clothed with light, soft hairs, rather dense along the sides, around the margin of the declivity, along the base and along the suture, but sparse on the central areas of the elytra.

The type is from the Cornell University Collection. Colorado; ♀.

CANADIAN BEES IN THE BRITISH MUSEUM

BY T. D. A. COCKERELL, BOULDER, COLORADO.

The bees in the British Museum are now being rearranged by Mr. G. Meade-Waldo, who has sent me for determination a number of species, some of them Canadian. In recording them, I give the accession numbers, which show when they were received at the museum. Thus, 99-303 means accession 303 of the year 1899. It will be seen that the three species of *Osmia* here introduced as new were received at the museum in 1844, more than 20 years before the birth of their describer. Other species were received at the museum long before they were described in this country.

Megachile femorata Smith.—♂, Canada, pres. by Mrs. Farren White, 99-303. ♂, Canada, 59-130. Smith's *femorata* is usually regarded as a synonym of *M. latimanus* Say, but Titus has treated it as a distinct species. If it is to be separated, the form with hardly any dark color on the anterior tibiae, and the coxal spires stout, must be referred to *femorata*, while *latimanus* male has approximately the basal half of anterior tibiae on outer side black and the coxal spines more slender. According to this separation, the usual Rocky Mountain insect is *latimanus*, but I have a male *femorata* from as far south as Las Vegas, New Mexico (at flowers of *Asclepias verticillata*; W. Porter). It seems probable that the two insects do not represent distinct species.

Megachile latimanus Say.—♂, British Columbia (Miss Ricardo) 1903-134. ♂, Calgary, Canada (Miss Ricardo), 1902-55. These females differ from the ordinary form by the distinctly longer black hair on the dorsal surface of the abdomen. They look a little like *M. vidua*, but are readily separated by the densely punctured mesothorax and the light hair of last dorsal abdominal segment.

Megachile wootoni Ckll.—♀, Calgary (Miss Ricardo), 1902-55. ♂, Calgary, with same data. ♂, Arctic America, 55-42.

Megachile melanophaea Smith.—♂, Hudson's Bay, 44-17.

Megachile relativa Cresson.—♂, Chulukwayuk trail, British Columbia, Aug. 1859.

Megachile vernonensis, n. sp.—♀, Length, about 11 mm.; black, with long dull white hair; antennae not enlarged at apex; eyes green; anterior coxae with short but well-formed spines, largely hidden by hair; anterior femora broad, smooth, concave and ferruginous beneath, above with a rather obscure red patch; hair on inner side of tarsi pale orange; sides of vertex with black hair, but none on thorax above; apical carina of sixth abdominal segment with a large rounded (semicircular) emargination, the margin on each side of it jagged with short irregular teeth;

December, 1912

morphological apex of sixth segment with four short dentiform projections, the middle ones not quite so near to one another as to the lateral, the margin between the middle ones convex. Almost exactly like the male of *M. cleomis* Ckll., but differing in the apex of sixth segment (*cleomis* has the middle teeth considerably nearer to one another than to the lateral, and the margin between them concave), and in having the densely granular concave upper surface of sixth segment so feebly white-tomentose that the tomentum is only visible in lateral view (*cleomis* has this part densely tomentose); the hair of the face has a creamy tint, instead of being clear white as in *cleomis*. The lateral ocellus is a trifle nearer to edge of vertex than to nearest eye.

♀.—Length, 11 mm.; mandibles 4-dentate, reddish apically; eyes light green, narrow; clypeus shining, closely punctured, its lower margin straight, a transverse depression above the margin; vertex with brown hair; abdomen with white hair-bands; sixth segment sloping (not concave) in profile, with coarse black hair, its apical third with very fine white tomentum; ventral scopa white, entirely black on last two segments. Very like a small *M. cleomis*, but distinguished by the wholly black hair on last two ventral segments, the narrower eyes, and the last dorsal abdominal segment as described. Also near to *M. generosa* Cress., but considerably smaller, and with the same distinctive characters as those separating it from *cleomis*. *M. anograe* Ckll., another similar species, is at once separated by its brilliantly shining sixth abdominal segment, with coarse black hair to the apex.

In Friese's table (Das Tierreich) the female runs nearest to *M. addenda*, but Robertson describes *addenda* as having the margin of clypeus denticulate, while only the last ventral segment of abdomen has black hair. The male runs best to *M. texana*, i.e., Cresson's male *texana* which appears to be *cleomis*.

Hab.—Vernon, British Columbia (Miss Ricardo). The type (male) taken July 7, 1902; the female, Aug. 18, 1902. This is possibly to be considered a subspecies of *M. generosa*, but with the evidence available it seems a distinct species.

Megachile montivaga Cresson.—♂, N. Ontario, Canada (H. Edwards), 89-113.

Megachile vidua Smith.—♂, British Columbia, 60-112. The specimen is unusually large.

Dianthidium pudens (Cresson).—♀, British Columbia, 60-112. Described from Nevada.

Osmia novaescotiae, n. sp.—♀, Length, about 9 mm.; head rather large, dark steel-blue, densely, punctured; mesothorax and scutellum more tinged with greenish but pleuræ and metathorax dark blue; abdomen short, broad-oval, shining steel-blue; hair of

head greyish-white, pale fuscous on middle of face; hair of thorax white, with a creamy tint above, and no dark hair intermixed; tegulae piceous, with a greenish spot in front; wings dusky hyaline, reddish, distance from base of first s.m. to insertion of first r.n. as great as length of first t.c.; b.n. going just basad of t.m.; legs reddish black, not at all metallic, with pale pubescence, reddish on inner side of tarsi; abdomen closely but rather shallowly punctured, the punctures going nearly to the margins of the segments; sub-lateral region with quite long black hair; ventral scopa black. The clypeal margin is entire, and the mandibles are 3-dentate; the area of metathorax is densely granular basally, but more shining apically.

Hab.—Nova Scotia (Ent. Club), 44-12. I have been much perplexed to decide whether this could be the female belonging to the male from Nova Scotia described as *O. simillima* by Smith. This may indeed be the case, but the type of *simillima* must be considered to be the female, which may not be conspecific with the male. Smith says that the female *simillima* is so like the European *O. caerulescens* that it is difficult to distinguish; but *novaescotiae* is easily separated from *caerulescens* by the broader, less deeply punctured abdomen, without white marginal fringes or bands. In our fauna it is *O. purpurea* Cresson, which closely resembles *caerulescens*.* In my brief notes on Smith's types, I observed that according to Robertson's tables the female type of *simillima* was an *Osmias* str., while the male was a *Monilosmia*. Dr. Graenicher has, however, obtained at Milwaukee, Wisconsin, what he regards as true *simillima*, and has both sexes from the nest. The male of this species is a *Monilosmia*, but the female has a black ventral scopa and clypeus with entire margin, quite contrary to Robertson's definition of *Monilosmia*. The Milwaukee females are larger than *novaescotiae*, with a dark greenish abdomen, and the hind margins of the segments more broadly smooth. They are very unlike *O. caerulescens*. They have the hair on inner side of middle tibiae black; in *novaescotiae* it is pale, with a reddish tint. The b.n. goes more broad of the t.m. than in *novaescotiae*. There is no doubt, I think, that the Milwaukee "*simillima*" is distinct from *novaescotiae*, but I find that except for the smaller amount of dark hair on the head (a variable character) it is scarcely or not to be separated from the western *O. densa* Cresson. This probably explains why we have never been able to find a male for *densa*;

*Can it be that *O. purpurea* is *caerulescens*? From the British Museum I have a female marked North America, 40, 4-2, 484, and it is quite impossible to distinguish it from European *caerulescens*, while, at the same time, it agrees with Cresson's description of *purpurea*. It has the shiny metathoracic area of *caerulescens*, which Smith expressly says is wanting in *simillima*.

it is doubtless of the *Monilosmia* type. *Osmia chlorops* Kll. and Titus, which occurs in the same localities as *densa* (e.g., at Florissant), and like it visits *Pentstemon*, is doubtless the male of *densa*. It is hardly different from the Milwaukee "*simillima*."

O. novaescotiae, compared with a number of species which have white hair on the pleura in the female, differs (1) from *albolateralis* by the deep blue (not green) abdomen, total absence of black hair on vertex, etc.; (2) from *coloradella* by the non-metallic legs, abdomen seen from above showing black hair projecting at sides, etc.; (3) from *densa* by absence of black hair on front, blue abdomen, etc.; (4) from *dubia* by the shining middle of mesothorax, largely pale hair on legs, and blue abdomen; (5) from *faceta* by the simple clypeus, etc.; (6) from *felti* by the much smaller size, dorsal abdominal segments sculptured almost to apex; (7) from *melanotricha* by the blue, more densely sculptured abdomen, and absence of black hair on vertex; (8) from *pentstemonis* by absence of coarse black hair on head and vertex; (9) from *phaceliae* by absence of black hair on vertex and scutellum, and blue abdomen.

Osmia subarctica n. sp.—♀, Length, nearly $7\frac{1}{2}$ mm.; dark steel-blue, the femora and tibiae metallic, the tarsi piceous; head rather large, densely punctured, clypeus and sides of face a fine dark blue; clypeal margin entire; mandibles tridentate; flagellum obscure ferruginous beneath; hair of clypeus black, but of sides of face white; hair of vertex pale, but front with a slight intermixture of fuscous hairs; hair of thorax entirely rather dull white; mesothorax and scutellum closely punctured, but shining; area of metathorax dull and granular; tegulae dark rufopiceous, blue in front; wings dusky hyaline; b.n. exactly meeting t.c.; hair of legs largely black, brown-black on inner side of tarsi; abdomen moderately shining, with shallow sculpture, dorsally with extremely short and scanty hair, white at sides; no hair-bands; ventral scopa black, with coppery tints.

Hab.—Hudson's Bay, 44-17. Closely related to *O. pentstemonis* Kll., but separated by the absence of dark hairs on thorax above, and the less shining abdomen. It is perhaps not more than a subspecies of *pentstemonis*, but I have a series of the latter, all looking different from *subarctica*. *O. subarctica*, compared with other species having white hair on the pleura of the female, differs thus: (1) From *albolateralis* by the metallic legs, much smaller size, etc.; (2) from *coloradella* by dark hair of middle of face, etc.; (3) from *densa* by the metallic legs and much smaller size; (4) from *dubia* by the metallic legs, etc.; (5) from *faceta* by the much smaller size, simple clypeus, etc.; (6) from *felti* by the much smaller size and metallic legs; (7) from *melanotricha* by the metallic legs, absence of long black hair in sublateral region of abdomen, and narrower head;

(8) from *phaceliæ* by the metallic legs, absence of black hair on scutellum, and narrower head.

Osmia atriventris Cresson.—♂. Ent. Club, 44-12. The accession number is the same as that of *O. novæscotiæ*, but there is no locality label.

Osmia tersula, n. sp.—♂, Length about $8\frac{1}{2}$ mm.; head and thorax densely granular-punctate, very dark green, with abundant long, wholly pale hair, slightly creamy-tinted on thorax above and head; mandibles stout, strongly curved, bidentate, the teeth subequal; face narrowing below; antennæ entirely dark, moderately long, not moniliform; area of metathorax blue-black, dull, granular; tegulæ piceous, punctured; wings dusky hyaline, b. n. meeting t.m.; second s.m. unusually long and low; legs brown-black, the femora and tibiæ not metallic, their hair long and pale, yellowish on inner side of tarsi; middle tarsi simple; hind basitarsi toothed; abdomen shining, very dark blue-green, the hind margins of the segments obscurely reddish; basal segment with long, pale hair; apical segments with conspicuous, long hair, wholly pale; middle segments almost hairless; no hair bands; venter with pale hair; margin of sixth segment with a shallow notch; seventh emarginate, hardly bidentate; first ventral entire; third ventral with an orange tuft or pencil of hair on each side of emargination.

Hab.—Hudson's Bay, 44-17. Distinguished especially by its dark color and toothed hind basitarsus. In Schmiedeknecht's table of European species it runs close to *O. panzeri*, but differs entirely in the antennæ and the pubescence. It may also be compared with *O. angustula*, which is smaller, with quite different pubescence. In our fauna there is closer resemblance to several species of the Rocky Mountains. The following table separates it from some of these:

Hair of vertex partly dark	1
Hair of vertex wholly pale	2
1. Scutellum with a median smooth line; teeth of mandibles subequal	<i>pulsatillæ</i> Ckll.
Scutellum without a smooth line; apical tooth of mandibles very long	<i>vallicola</i> Ckll.
2. Abdomen shining blue; seventh segment very strongly bidentate	<i>wheeleri</i> Ckll.
Abdomen dark greenish; seventh segment emarginate	<i>tersula</i> Ckll.

From *O. tersula*, *O. amala* Ckll. differs at once by the bright blue abdomen and much larger antennæ; *O. enena* Ckll. by the blue abdomen, strongly bidentate seventh abdominal segment, and broader face; *O. seneciophila*, by the abundant black hair on apical part of abdomen.

NOTES ON SOME CANADIAN BEES

BY J. C. CRAWFORD, WASHINGTON, D. C.

The specimens here recorded are part of a collection made at Medicine Hat, Alberta, by Mr. J. R. Malloch, between September 1st and October 15th, 1911. Other species of bees, which have not been studied, were also collected.

Agapostemon viridulus Fabr.—2♂.

Bombus huntii Greene.—1♂, 1♀.

Calliopsis coloradensis Cress.—6♂, 1♀.

Diadasia diminuta Cress.—1♂.

Dialictus anomalus Robt.—3♂, 1♀.

Halictoides marginatus Cress.—2♂, 2♀.

Halictus aberrans Cwfd.—1♂, 2♀.

Halictus lerouxii Lep.—8♂, 4♀.

Halictus provancheri D.T.—3♂, 1♀.

Halictus pruinosiformis Cwfd.—5♂, 4♀.

Halictus pruinosus Robt.—3♂.

Neopasites illinoiensis Robt.—1♂, 2♀.

Panurginus innuptus Ckll.—1♂, 1♀.

Perdita cockerelli Cwfd.—2♂, 1♀.

Perdita citrinella Grænicher—1♂, 2♀. Both the females have the hind tibiae darkened. In one female the first recurrent vein is interstitial; in the other it is received by the first submarginal cell as in a paratype of the species.

Sphecodes minor Robt.—2♀.

Phileremulus mallochi, new species.—Male: Length, 3 mm; head and thorax black, closely punctured (but the sculpture concealed by the pubescence), closely covered with white appressed pubescence, that on the dorsum of the thorax slightly tinged with yellowish; abdomen red, disks of segments 4-6 more or less suffused with dusky; apical margins of segments 1-6 with bands of white appressed pubescence, disk of first segment with similar pubescence; labrum and mandibles, except the reddish tips, testaceous; scape and pedicel black, rest of the antennæ reddish; axillæ produced, tooth-like; tegulae dark, the outer edge at middle obscurely reddish; scutellum bilobate at apex; metanotum medially strongly produced into a bilobate process; propodeum with a roughened basal triangular area without pubescence and with a strong median longitudinal carina; wings hyaline, marginal cell squarely truncate at apex; submarginal cell appendiculate at apex, receiving the recurrent vein slightly apicad of the middle; femora dark, tibiae and tarsi yellowish more or less suffused with dusky and the apical joints of the tarsi dark; abdomen rugoso-punctate.

December, 1912

Habitat.—Medicine Hat, Alberta, Canada. One specimen collected by Mr. J. R. Malloch. Type Cat. No. 15212, U.S.N.M.

This species in general appearance, very closely resembles *Neolarra pruinosa*, but in addition to the generic differences, differs also in the dark tegulae, the carina on the propodeum more elevated, the appressed pubescence not covering the abdomen, etc. *P. vigilans* and *P. nanus* are both smaller, with light coloured tegulae and with the appressed pubescence covering abdomen; *P. vigilans* also has the carina on the propodeum indicated at base only, the process on metanotum only indicated, etc.

Perdita canadensis, new species.—Female. Length about 9 mm. Head blue-green, thoracic notum green, pleurae blue-green; clypeus and labrum black, the former with purplish tinges, smooth, with a few fine punctures and produced anteriorly of a line connecting the lower ends of eyes fully one-third the length of the distance between eyes at lower ends; face without markings; antennae dark, scape with a narrow yellow line, apical joints of flagellum reddish beneath; pubescence of head and thorax long, erect, strongly tinged with ochraceous; collar with two small yellow spots; tubercles dark; wings milky white; veins hyaline; the stigma and costal vein light brown; first recurrent vein interstitial or almost so; legs dark, anterior knees and a short narrow stripe on anterior tibiae yellow; pubescence on outer side of legs greyish, on inner side ochraceous, on tarsi reddish; first abdominal segment with a small yellow spot on each side; segments 2-5 with yellow bands; the ends of which are turned caudad on segments 3-5; band on second segment dilated laterally so that the posterior margin is diagonal; bands on segments 2-3 notched medially on posterior margin; pygidium broad at apex with the apical margin emarginate.

Habitat.—Medicine Hat, Alberta, Canada. Two females collected by Mr. J. R. Malloch. Type Cat. No. 15213, U.S.N.M.

This species belongs to the group with *albipennis* Cresson, *lacteipennis* Swenk and Cockerell, and *pallidipennis* Grænicher; it differs from all of them in the dark face and other markings; *albipennis* and *pallidipennis* have the first recurrent vein received by the second submarginal cell and the pygidium rounded apically; *albipennis* has the clypeus produced hardly half as much as *canadensis*; *pallidipennis* has it produced about as much; *lacteipennis* has the clypeus produced about as in *albipennis* the first recurrent vein received by the second submarginal cell and the pygidium emarginate at apex. Of the value of this last character I am at present doubtful.

NEW SPECIES OF *FURCOMYIA* (TIPULIDÆ).

BY CHAS. P. ALEXANDER, ITHACA, N. Y.

(Continued from page 341.)

Furcomyia libertoides, sp. n.

Closest allied to *liberta* O. S. of the Eastern U. S., but differs as follows: The præscutal stripes are not clearly defined, the middle of the dorsum being suffused with bright brown; tergum of abdomen brownish, not clear gray; wings with the stigma conspicuous, rectangular, not a narrow seam to cross-vein *r*. Hypopygium from above—see fig. 5.). The pleural piece triangular, the ventral apical appendage fleshy, its inner margin produced into a point which is directed cephalad; two short spines about equal in size, projecting caudad on the middle of this appendage; dorsal arm, or apical appendage, rather short, gently curved. Venation, fig. 1.

Length about 6.5–7.5 mm.; wing, 8.7–8.8 mm.

Holotype.—♂. Marin Co., Cal.; March 23, 1897.

Paratypes.—♂s 5. With the type.

The material is part of the Wheeler collection; one paratype in author's collection.

Furcomyia simillima, sp. n.

Yellowish thorax, with a dark brown median stripe; halteres very long.

♂.—Length about 5.5 mm.; wing, average, 6.8 mm.

♀.—Length about 5.8 mm.; wing, average, 7.4 mm.

Head: rostrum and palpi dark brown. Antennæ, first segment dark brown, thickly gray pruinose, remaining segments dark brownish black. Front, vertex and occiput brown, thickly gray pruinose, producing a gray effect.

Thorax: cervical sclerites dark, almost black; pronotum light dull yellow, dark brown along the dorsal median line. Mesonotum bright brownish yellow, becoming grayish on the sides; a broad dark brown median stripe continued from the pronotum, ending just before the suture; lateral stripes indistinct, grayish brown, beginning behind the pseudo-suture, continued across the suture and suffusing the lobes of the scutum; median line of the scutum and the scutellum paler yellowish white; postnotum brown; metanotum light yellow. Pleuræ light yellow, becoming grayish toward the metapleuræ. Halteres very long, extreme base yellowish, rest dark brown. Legs: coxæ and trochanters yellowish; femora yellow becoming somewhat darker apically; tibiæ and tarsi

December, 1912

yellowish brown. Wings subhyaline; no stigmal spot; veins yellowish brown. Venation: (See fig. n.) Sc ending before origin of Rs, Sc₂ far before tip so that Sc₁ is long, somewhat shorter than Rs; basal deflection of Cu₁ before the fork of M.

Abdomen: tergum yellowish brown, apices of the sclerites narrowly paler; sternum light yellow.

Holotype.—♂. Totonicipan, Guatemala. (Dr. G. Eisen.)

Allotype.—♀. Antigua, Guatemala. (Dr. G. Eisen.)

Paratypes.—11 ♂s, 8 ♀s. Quichi (July, 1902); Antigua and Totonicipan (July, 1902); Guatemala.

Types in U. S. Nat. Mus. coll. (No. 15,134.) Paratypes in author's collection.

Resembles *particeps* Doane (Ent. News, Jan., '08, p. 7), from north-western U. S., but head is more gray, abdomen much lighter coloured and the thoracic stripes different.

Furcomyia andicola, sp. n.

Head gray; thorax brownish yellow; wings with scanty brown marks.

♀.—Length, 8.1 mm.; wing, 11.2 mm.

♀.—Head: rostrum and palpi dark brown. Antennæ, basal segments brown, flagellar segments very dark brown. Front, vertex and occiput gray.

Thorax: pronotum dull yellow, the dorsum indistinctly suffused with brown. Mesonotum dull brownish yellow, a broad brown median stripe and shorter, less distinct lateral ones; scutum reddish brown, suffused with darker brown; scutellum and postnotum brown, with a grayish brown bloom. Pleuræ dark brown. Halteres, stem greenish at base, darkening to brown at the tip. Legs: coxæ greenish, femora brownish yellow, the tip clearer yellow; tibiæ light brown, darkened at tip; tarsi brown. Wings subhyaline, veins brown, C, Sc and R, more yellowish; a large, rectangular brown stigma, which is continued back over the fork of Rs as a rounded spot; narrow brown seams on the cord and outer end of cell 1st M₂. Venation (see fig. h.): Sc ending just beyond origin of Rs; Sc₂ removed from the tip so that Sc₁ is rather more than half as long as Rs; Rs about one and one-half the length of the deflection of R₄₊₅; basal deflection of Cu₁ before the fork of M.

Abdomen: tergum and sternum brown, the apices of the sclerites yellowish. It is probable that, in life, the insect is quite greenish.

Holotype.—♀. San Antonio, Bolivia. (Received from Staudinger-Bang-Haas.)

Type in author's collection.

Agrees most closely with *phatta* Phil., which has the thorax gray and the wing-pattern very different, three black spots in cells 1st R_1 and 2nd R_1 ,

Furcomyia insignifica, sp. n.

Head brownish gray; thorax reddish brown, darker medially.

♀.—Length, 8.5 mm.; wing, 9.6 mm.; fore leg, femur, 5.9 mm.; tibia, 7.3 mm.

♀.—Head: rostrum, palpi and antennæ dark brown. Front, vertex and occiput brownish gray.

Thorax: pronotum yellowish brown. Mesonotum, præscutum reddish brown, darkest brown medially on præscutum; paler, yellowish, on the humeral angles; pleuræ brownish yellow, brightening to yellow on the sternum. Halteres long, slender, brown, brighter at the base. Legs long, slender; coxæ and trochanters yellowish; femora yellowish brown; tibiæ and tarsi brown. Wings hyaline, veins light brown; stigma barely indicated, rectangular, very pale. Venation (see fig. i.): Sc short, Sc_2 quite removed from the tip of Sc_1 ; R_s short, not much longer than the deflection of R_{4+5} ; basal deflection of Cu_1 far before the fork of M.

Abdomen: tergum dark brown on the basal segments, lighter brown on the apical segments; sternum light brown.

Holotype.—♀. Iquico, Peru. (Received from Staudinger-Bang-Haas.) Type in author's collection.

This species cannot be referred to *pallida* Macq., which has a triangular cell 1st M_2 which bears a spur, this character of an appendiculate cell also separating *elquiensis* Blanch. The other species with unspotted wings, *flavida* Phil. and *chlorotica* Phil., are quite different insects, specimens of which are before me, and will be redescribed in a later paper.

Furcomyia argentina, sp. n.

Head gray; thorax gray, darker on dorso-median line.

♀.—Length, 8 mm.; wing, 8.9 mm.; fore leg, femur, 6 mm.; tibia, 7 mm.; hind leg, femur, 7.1 mm.; tibia, 7.7 mm.

♀.—Head: rostrum and palpi dark brown. Antennæ dark brown, grayish pollinose; segments submoniliform. Front, vertex and occiput gray.

Thorax: pronotum brownish gray, the gray being pollen. Mesonotum, præscutum gray, with an indistinct, broad, brown, median stripe; scutum, scutellum and postnotum pale, with a gray pollen. Pleuræ pale

gray pollinose. Halteres short, stem dull yellow, knob brown. Legs: coxæ and trochanters dull yellow; femora similar, rather darkened toward the tip; tibiæ and tarsi light brown. Wings hyaline, veins dark brown, conspicuous; stigma indistinct, brownish. Venation (see fig. k.): Sc ends opposite the origin of Rs; Sc₂ far retracted so that Sc₁ is almost as long as the stigma; Rs only a little longer than the deflection of R₁₊₃; basal deflection of Cu₁ at the fork of M.

Abdomen: tergum dull brown; sternum yellowish brown.

Holotype.—♀. Neuquen, Argentina, 1907. (Dr. Adolf Lenol.)

Type in author's collection.

Differs from the hitherto described species by the characters given in under *insignifica*. From *insignifica* it differs in its wing venation, colour of veins, and body tone.

♂ *Furcomyia fumosa*, sp. n.

Wings infumed, with darker clouds.

♀.—Length about 5.5 mm; wing, 6.3 mm.

♀.—Head: rostrum and palpi dark brown. Antennæ dark brownish black. Front, vertex and occiput brownish, with a grayish pubescence.

Thorax: pronotum dark brown. Mesonotum light brown, the postnotum darker. Pleuræ dark brown. Halteres dark brown, base of the stem light coloured. Legs: coxæ and trochanters dark brown, rest of legs broken. Wings infumed with brown, darker brown clouds arranged as follows: At origin of Rs, at tip of Sc, at tip of R₄, along cord; most of veins and tip of wing clouded with dark brown. Venation (see fig. t.): Sc long, Sc₁ ending slightly before the fork of Rs, Sc₂ at its tip; R₁ bends down near its end and touches R₂₊₃, obliterating the cross-vein *r*; basal deflection of Cu₁ beyond the fork of M.

Holotype.—♀. Amatuk, British Guiana; July 14, 1911. (F. E. Lutz.)

Type in American Museum of Natural History.

This insect is closely allied to *Limnobia insularis* Will. (Dipt. St. Vincent, Trans. Ent. Soc. Lond, 1896, p. 287, pl. 10, fig. 58), but the wing has quite a different pattern, cell 1st M₂ less elongated, basal deflection of Cu₁ farther distad, etc. The two species are certainly as close to *Furcomyia* as they are to *Limnobia*, but seem to represent a peculiar group which needs further study with more material.

MR. EDWARD P. VAN DUZEE, of Buffalo, leaves early in December for a four months' vacation in California. His temporary address will be San Diego, Calif.

SYNONYMICAL NOTES ON OEDIONYCHIS

BY F. C. BOWDITCH, BROOKLINE, MASS.

In the rearrangement of my Oedionychis material I note the following:

In the Biologia, p. 418, speaking of *oculata* Fabr., Mr. Jacoby mentioned a figure of a species taken by himself. This figure is now before me, and agrees exactly with a specimen I have from Cayenne (typical locality). I think additional material will prove that the Central American form is distinct.

The name *illigeri* (Jac.) Proc. Zool. Soc., 1905, p. 441, for a Trinidad species was previously used in the Biologia, p. 421, for a Panama insect, so I would suggest for the later form the name *trinidadensis*.

The name *inconspicua* (Jac.) l.c., p. 424, for an Amazon form, was previously used in the Biologia, p. 417, for a Mexican species, so I would suggest for the later form the name *amazona*.

The name *colombiana* (Jac.) l.c., p. 445, was previously used in the same paper, p. 427, evidently some uncorrected error, for the species described on p. 445. I suggest the name *confusa*.

The name *rustica* (Jac.) l.c., p. 433, for an Argentine form, was previously used by Von Harold, Deut. Ent. Zeit. XXI, p. 434, for a species from Bahia. For the Jacoby species I suggest the name *similis*.

The name *intersignata* (Jac.) l.c., p. 433, for a species from Espirito Santo, Brazil, was previously used (P. Z. S., 1894, p. 617), for a form from Surinam. I suggest the name *santoensis* for the Brazilian form.

Asphaera femorata (Jac.) seems to me the same as *chontalensis* (Jac.).

In explanation I would add that the late Mr. Jacoby in his working current catalogue (since 1885), for some reason or other, had not entered such of the "Biologia species" as were published after the date of Duvivier's list, so that all the names he used in the Biologia were not before him when he wrote in 1905.

NOTES ON SYNTOMASPIS DRUPARUM BOH.
AND ICHNEUMON NIGRICORNIS BERGER

BY C. R. CROSBY, ITHACA, N.Y.

In Bulletin 265 of the Cornell Agricultural Experiment Station, April, 1909, I gave an account of the habits of the Apple-seed Chalcis, (*Syntomaspis druparum* Boh.), and a resumé of the literature known to me at that time. Since then three more important papers have come to my notice.

December, 1912

In 1888 Dr. D. H. R. von Schlechtendal (Zeits. f. Naturwiss., Halle, ser. 4, VII., (LXI.), p. 416) records having reared this insect from the seeds of *Cratægus*. He states that the insect usually spends two or three winters in the larval state, only rarely emerging the first spring. He observed oviposition and found that the egg is deposited in the kernel. The ovipositor is inserted through the micropyle, the seed coat being very hard and thick.

In my former article I stated that the first account of this insect was given by Guérin-Ménéville in 1865. This is an error, for over sixty years before Francois Berger of Geneva, Switzerland, published (Bull. Sci. Soc. Philomatique Paris, An. XII, 1803, p. 141—wrong pagination for 241) a brief account of its habits and gave excellent figures of the larva, pupa and adult. This article has been overlooked so long because the insect was identified as *Ichneumon nigricornis* Fab. It is catalogued by Dalla Torre as *Ichneumon nigricornis* Berger although Berger stated that Jurine believed it should go in the genus *Chalcis*. The *Torymus nigricornis* of Boheman (Svensk. Vet.—Akad. Handl. p. 355, 1833) to which *Ichneumon nigricornis* Fabr. has been referred by Dalla Torre is an entirely different insect.

Soon after the publication of Bulletin 265 I obtained a copy of a paper entitled, "Commentatio de Torymidis, quarum larvæ in seminibus pomacearum vitam agunt," by W. N. Rodzianko, 1908, in which he gives an excellent review of the literature relating to *Syntomaspis druparum* and gives an extensive account of careful rearing experiments.

THE MIGRATION OF *ANOSIA PLEXIPPUS* FAB.

BY F. M. WEBSTER, WASHINGTON, D.C.

Regarding a phenomenon that has attracted so much attention, as has the migrations of the milkweed butterfly, among scientific men both at home and abroad, more especially of entomologists, we seem to possess a surprisingly limited amount of definite information. These migrations have been frequently reported in the newspapers and they are often observed by entomologists, as they appear to take the form of scattered bands, but where the members of these bands originate no one seems to know. Not all of the butterflies in a locality join the migration, as, after the bands have appeared from out of the north and passed onward toward the south, there are many others left behind. At least, this is true in the United States, and the writer has observed three of these migratory bands in the last twenty years.

September 21, 1892, in the clear, calm afternoon, there were swarms of these butterflies flying about in the city of Cleveland,

December, 1912

Ohio, on the south shore of Lake Erie. Whether the members of this band were migrants from the shores of Hudson Bay and Lake Athabasca, far away to the northwest, or whether they had gathered there from the east or west it was of course impossible to say.

The next band to be observed was at Urbana, Illinois, September 12, 1902, also in the afternoon, but at a temperature of 55° Fahr., with a brisk northwest wind and clear sky. Either this or another band of butterflies of this species was reported at Milledgeville, Illinois, about 160 miles to the northwest of Urbana, three days prior, while evidently still another was reported at Hoopstown, Illinois, some 35 to 40 miles north-east, a few days later. Whether or not these all belonged to the same band of migrants, from whence they came, or how the members came to be associated together, is still an unsolved problem. At Urbana, the company moved away on the morning of the 13th, but the usual number were observed wandering about, in a perfectly natural way, during the remainder of the month.

The third migration, observed by the writer, took place on September 12, about 3 p.m., on the Mall in Washington, D.C. The weather was cold, with light n.w. wind, but the sky was unclouded. This last, however, was not further investigated.

The daily press of Chicago, Illinois, September 13, one day prior to the occurrence in Washington, called attention to swarms of this butterfly observed congregating in the parks and gardens of the city and starting southward on their journey.

While it is true that this insect is of no economic importance, and of far too common occurrence to interest the collector, yet it seems to me that studies of the migrations of this species are well worth while, and the results would, beyond a doubt, prove of material aid in studying a similar habit in much more important species. The migration of insects is of itself an interesting problem, and a little care in observing and recording the appearance of these migrations and under what conditions these took place, would surely repay the many entomologists, amateurs and professionals scattered over Canada and the United States.

ON THE STATUS OF SOME SPECIES OF THE GENUS PANURGINUS.

BY J. C. CRAWFORD, WASHINGTON, D. C.

In a paper on the bees of Nebraska,* Messrs Swenk and Cockrell say that a comparison of cotypes of *Panurginus nebrascensis* with specimens of *P. ornatipes* shows that the two are synonyms and that *P. boylei* is a subspecies. The types of all of the involved

*ENT. NEWS, XVIII., 183, 1'07.

December, 1912

species being in the collections of the U.S. National Museum has led to a re-examination of them and the characters given show them to be abundantly distinct. In view of these characters, what Messrs. Swenk and Cockerell had under the name *ornatipes* is somewhat of a mystery.

Panurginus ornatipes Cresson.—Male type: Process of labrum emarginate; punctures covering clypeus; punctures of mesoscutum small, sparse, at median anterior margin the punctures more sparse than at sides; a yellow stripe exteriorly on middle tibiae (hind tibiae missing, but in a specimen from Paris, Texas, which is certainly conspecific with the type, the hind tibiae have a similar stripe); wings yellowish and slightly dusky.

Panurginus nebrascensis Crawford.—Male type: Process of labrum rounded apically, punctures covering clypeus; punctures of mesoscutum, large, close, at anterior ends of parapsidal furrows separated from each other by about the diameter of a puncture; punctures at median anterior margin of mesoscutum finer and crowded; middle and hind tibiae completely annulate with black; wings dusky, more so apically.

Panurginus boylei Cockerell.—Male type: Process of labrum emarginate apically; clypeus with a median impunctured space which has a median depressed line; punctures of mesoscutum as large as in *nebrascensis* but not crowded along anterior median margin; middle and hind tibiae completely annulate with black; wings slightly yellowish.

NOTE ON VANESSA CALIFORNICA AT PEACHLAND, B. C. IN 1912.

BY J. B. WALLIS, WINNIPEG, MAN.

A somewhat remarkable visitation of *Vanessa californica* came to my notice when in Peachland, B. C., during July, 1912.

Almost immediately on my arrival I was questioned concerning a caterpillar (descriptions decidedly remarkable!) which had occurred in such numbers as to defoliate its food-plant, and had been compelled to migrate by thousands. I was also told of the appearance, in very large numbers, of a brown butterfly which was believed to be connected with the "worms."

In neither of my two previous visits (1907-9) had *californica* been seen, so I was quite at a loss to place a caterpillar whose food-plant was *Ceanothus* sp.

Next day the problem was solved. On going a mile or two into the hills, *californica* was found in very great numbers. There must have been many thousands of them, and in favored spots they almost filled the air. Being in a wagon, I made little effort to secure specimens, although five were taken at one almost aimless sweep of the net.

December, 1912

Four days later I made a special trip after *californica*, but, with the exception of three deformed specimens, not one was seen, and during the remainder of my five-week stay not more than a dozen were noticed.

It would be interesting to know if a large influx of this beautiful butterfly was noted in any locality.

Practically every plant of *Ceanothus* was entirely defoliated, and the pupa cases were hanging everywhere. Nine were counted on a twig four inches long, eight on another five inches long, and so on; while some young pine trees about seven feet high looked to be well laden with strange fruit.

The percentage of parasitism appeared to be very small. I did no actual counting of large numbers, but estimated it was no greater than one per cent.

ON THE LARVA OF *PLEUROPRUCHA* (*DEPTALIA*) *INSULARIA* GUEN.

BY LOUIS B. PROUT, LONDON, ENGLAND.

My esteemed correspondent, Dr. Eugenio Giacomelli, of La Rioja, Argentine Republic, recently sent me the description of the larva and pupa of a small Geometrid moth unknown to him, together with imago bred therefrom. Knowing how extremely little had yet been done with the early stages of the Neotropical *Geometridæ*, he naturally hoped that his discovery might prove entirely new. This is not actually the case, for the moth turns out to be the very widely distributed *Pleuroprucha insularia* Guen. (var. ? *asthenaria*, Walk.; compare my memoir on the Argentine *Geometridæ*, Trans. Ent. Soc., Lond., 1910, 215.) But as the larva is evidently very variable, and it seems likely that the Southern form constitutes a local race, it is well worth while to give a translation of Dr. Giacomelli's note on his larva. His account of the pupa, both as to its structure and its activity, agrees very exactly with Hulst's (Ent. Amer., 3, 175, 1887, erroneously as *Acidalia "insularia"*).

"Ground color delicate green, more intense dorsally, ventral region glaucous green; above on the central segments three small, crescent-shaped spots, yellow, paler than the ground; mediodorsal and lateral lines also paler. Setæ simple, not numerous, short, inconspicuous. Later it changes color as follows: The delicate green becomes glaucous, the longitudinal lines a dull vinous red, laterally and dorsally, between them some round dots of the same colour [the tubercles], bearing the short, simple hairs.

"The larva lives on *Prosopis* (Mimosæ) and *Acacia ripari* (Mimosæ). It pupated five days after I took it, so that it would appear that the change of colouring indicates that the transformation from caterpillar to chrysalis is near at hand."

December, 1912

I am indebted to Mr. Grossbeck for calling my attention to Hulst's descriptions, as well as a note by Bruce (Ent. Amer., 3, 48), to the effect that he bred the species from the egg of *Galium*. Packard gives *Celastrus scandens*, and it is evidently not very particular about its food.

THE SECOND INTERNATIONAL CONGRESS OF ENTOMOLOGY.

BY HENRY H. LYMAN, MONTREAL.

I confess that it is with considerable diffidence that I approach the above subject. Reports of the meeting have already been published by Mr. H. Rowland-Brown in "The Entomologist," and by the Canadian Government representative, Dr. C. Gordon Hewitt, in this journal, but there are certain aspects of the subject which these gentlemen have not dwelt upon that appear to me, at least, to be of considerable importance.

I hope I am not wrong in assuming that the *raison d'être* of an international scientific congress is primarily to study the subject in its international aspect, and to secure, as far as possible, co-operation among the scientists of all the countries represented, and that this aspect should never be lost sight of. Yet, it appears to me, as one who has attended both congresses so far held, that this aspect was less in evidence at the Oxford meeting than at the one held two years previously at Brussels; while the social aspect, which was almost absent in Brussels, was very strongly developed. I fully admit the agreeable nature and also the important character of the social aspect, but I think there is a danger of overdoing it, and that it should never be allowed to obscure the more serious business of the gathering.

These congresses being from now on held only every three years, and, considering the very considerable expense incurred by governments and institutions in sending representatives to them, is it not of the highest importance that they should not be merely very pleasant reunions where highly interesting papers are read by eminent scientists, and where afterwards the pipes of social peace are smoked around the social board, but that the many pressing questions of international importance should be given first place and some attempt made to solve them, instead of referring them to committees from one congress to another, while every year confusion, at least in nomenclature, is becoming worse confounded? It is quite true that some attempt was made by some authors to deal with matters of international concern, but such attempts were few, and, unfortunately, some of the ideas were crude.

The programme, including the President's annual address,
December, 1912

comprised about fifty-five papers, but of these not more than ten were of international or semi-international interest.

Mr. Charles Oberthur in his paper advocated the adoption of a rule that no description should be accepted as valid unless accompanied by a good figure. Such an idea could not, of course, be entertained, for, apart from the difficulty of determining what is a good figure, it would, in the absence of highly-endowed journals or expensive government publications (which would only be open to official entomologists), throw the work of describing new species into the hands of wealthy entomologists who could afford to furnish the illustrations.

The suggestion of Mr. Ernest Olivier, that the Latin language should be used in all entomological descriptions is equally impracticable; and, even if it could be adopted, would certainly not mend matters, judging from the extremely meagre and inadequate Latin descriptions of the past.

The centralization of diagnostic descriptions, advocated by Mr. E. E. Green, while a consummation devoutly to be wished, seems impossible of attainment, but certainly a great improvement over the present chaotic condition could be made by a little co-operation between the entomologists of each country.

Of the other papers of international import, the only ones which led to any action were those by Mr. A. G. L. Rogers and Messrs. Wheeler and Bethune-Baker, the latter being accompanied by a communication on nomenclature from the Entomological Society of London, which led to important action being taken, as detailed by Dr. Hewitt.

There is another point which certainly merits consideration, and that is the serious disproportion among the representatives of the different nations, the English members of the congress equalling, if not outnumbering, the representatives of all the other countries combined. This was referred to by one of the German entomologists to whom I spoke while waiting on the Tring platform for the London train, who pointed to the whole page of names of English representatives, and said there were too many.

Disproportionate representation is, of course, inevitable, as there will always be a fuller representation of the entomologists of the country in which the congress is held, but if it should ever be desired to settle any disputed point by majority vote, some scheme of proportional voting power would probably have to be adopted.

If the congress could be brought to seriously consider and decide such questions as to whether or not the law of priority should be rigidly enforced in all cases, irrespective of consequences, whether the Tentamen of Hubner should or should not be recognized, and similar troublesome questions, it would do more to justify its existence than it has yet done.

BOOK NOTICE.

HOUSE FLIES AND HOW THEY SPREAD DISEASE. By C. G. Hewitt, D. Sc. (The Cambridge Manuals of Science and Literature, Cambridge; the University Press. One shilling.)

Although in the last few years the public has at last become more or less awake to the fact that the house fly is not merely a troublesome nuisance but a serious enemy of mankind, few even among the educated realize the many ways in which this ubiquitous insect can make itself a source of danger to public health. The present little book is just what has been needed to bring this important matter home to the public mind and we believe it will have a far-reaching influence in increasing such efforts as are being made to keep this pernicious insect under control.

The book is not a record of new observations, the subject matter having already been set forth at much greater length in Dr. Hewitt's earlier work—"The House-fly: A Study of its Structure, Development, Bionomics and Economy."* It is written for the benefit of the layman, and it has been the author's endeavour "to avoid as far as possible the use of technical terms unfamiliar to the lay mind and the inclusion of matter which is of interest chiefly to the specialist." In this aim we think he has been eminently successful, the book being written in a clear, simple style, as easy to read as a novel.

Of the two parts into which the book has been divided, the first deals with the natural history of the fly; the second with its relationship to disease. In Part I. the author has wisely restricted the description of the fly's structure and metamorphosis to such features as are necessary to a proper understanding of the general facts of its life history. In this part are also given short accounts of other species of flies commonly found in houses and of the parasites and natural enemies of the house-fly. In Part II. the relationship of flies to a number of diseases is discussed, a special chapter being devoted to the important *role* which they play in the dissemination of typhoid fever and the summer diarrhoea of infants. In the last chapter is a full description of the methods of control which a thorough study of the fly's life history have proved to be most efficient in destroying it.

The little volume, which is small enough to be carried in one's pocket, has a most attractive appearance, the paper and print being of excellent quality and the illustrations, with few exceptions, are reproduced from the beautiful plates which accompanied the author's earlier work on the house-fly (l.c.). The quaint design on the title page is a reproduction of one used by the earliest known Cambridge printer, John Siberch, 1521.

*Manchester University Press, Biological Series, No. 1, 1910.

INDEX TO VOLUME XLIV.

- ABBOTT, J. F., article by, 113.
 Acanthothrips nodicornis, 142.
 Achorotile foveata, n. sp., 241.
 Aeshna canadensis, 262.
 " constricta, 262.
 " eremita, 262.
 " interrupta lineata, 261.
 " juncea, 261.
 " palmata, 262.
 " sitchensis, 261.
 " subarctica, 261.
 " umbrosa, 262.
 Agilus auricomus, n. sp., 250.
 " cephalicus, 248.
 " champlaini, n. sp., 245.
 " crataegi, n. sp., 247.
 Agilus strigicollis, n. sp., 41.
 Agrotiplula incognita, 33.
 " maculata, 34.
 ALDRICH, J. M., article by, 104.
 Aleuriscus cardini, n. sp., 148.
 ALEXANDER, C. P., articles by, 83, 333, 361.
 ALEXANDER, C. P., and LEONARD, M. D., article by, 205.
 Aleyrodes floridensis, 148.
 " howardi, 147.
 " mori, 147.
 " nubifera, 146.
 " trackoides, n. sp., 151.
 " variabilis, 147.
 Ammodonus granosus, n. sp., 47.
 Amobia distincta, 3.
 Amolita delicata, n. sp., 90.
 " fratercula, n. sp., 90.
 Amphigriagon saucium, 255.
 Anaphes pratensis, occurrence in North America, 88.
 Anosia plexippus, migration of, 366.
 Anthidium porteri, 293.
 Apanteles incorrupta, larval stages of, 188.
 Apanteles phalerata, larval stages of, 189.
 Apanteles phyllira, larval stages of, 132.
 " placentia, larval stages of, 135.
 Aphid, a new Oregon, 302.
 Aphid notes from Oregon, 191.
 Aphodius campestris, n. sp., 331.
 Arctiidae, larval stages of certain, 132, 188.
 Arenobius, n. gen., 177.
 Arenophilus bipuncticeps, 66.
 Argyresthia annettella, 159.
 Astichus bimaculatipennis, n. sp., 8.
 Athetis mona, n. sp., 56.
 BACK, E. A., article by, 145.
 BANKS, N., article by, 197.
 BARNES, WM., and McDUNNOUGH, J., articles by, 17, 52, 90, 122, 132, 163, 188, 216, 270.
 Basilarchia weidermeyerii angustifascia new race, 163.
 Bats vs. mosquitoes, 231.
 Bees, Canadian in British Museum, 354.
 Bees from Gualan, Guatemala, 277.
 Bees, notes on Canadian, 359.
 Bees, some parasitic, 165.
 Bees, two new Canadian, 293.
 BLATCHLEY, W. S., article by, 330.
 Blattidae of Ontario, 171.
 Bleptina flaviguttalis, n. sp., 122.
 " minimalis, n. sp., 123.
 Book Notices—
 Barnes and McDunnough's Contributions to the Natural History of the N. American Lepidoptera, 95.
 Blatchley's Woodland Idylls, 282.
 Casey's Memoirs on the Coleoptera, 195.
 Hewitt's House Flies, and How They Spread Disease, 372.
 Johannsen's Fungus Gnats of N. America, 315.
 Langstaff's Butterfly-hunting in Many Lands, 223.
 Sanderson's Insect Pests of Farm, Garden and Orchard, 127.
 Sanderson and Jackson's Elementary Entomology, 313.
 Sladen's Humble-Bee, 347.
 Walker's North American Aeshnid Dragonflies, 242.
 Bothropyls, characters of, 173.
 BOWDITCH, F. C., articles by, 12, 57, 365.
 BRAUN, A. F., article by, 159.
 Bruchus arenarius, n. sp., 162.
 BUENO, J. R. de la T., articles by, 31, 209.
 CAESAR, L., article by, 313.
 Cephalcia criddlei, n. sp., 296.
 " distincta, n. sp., 296.

- Cephaleia jenseni*, n. sp., 297.
 CHAMBERLIN, R. V., articles by, 65, 173, 204.
Chelynia ricardonis, n. sp., 293.
Chrysogaster bellula, 291.
 CLEMENCE, V. L., article by, 102.
 Coccidae, from the Grand Canon, 301.
 COCKERELL, T. D. A., articles by, 93, 165, 293, 301, 354.
 COCKERELL, W. P., article by, 277.
Calambus marginipennis, n. sp., 330.
Coelioxys angelica, 166.
 " *erysimi*, n. sp., 166.
 " *fragariae*, n. sp., 167.
 " *grindeliae denverensis*, n. subsp., 166.
 " *hirsutissima*, n. sp., 168.
 " *immaculata*, n. sp., 165.
 " *quercina*, n. sp., 167.
 " table of species, 168.
 " *texana vegana*, n. subsp., 166.
Cænagrion angulatum, n. sp., 256.
 " *resolutum*, 255.
 Coleoptera, bred from cow manure, 183.
 Coleoptera, from a Maine Sawmill Yard, 304.
 Coleoptera, new Florida, 330.
 Coleoptera, new Illinois, 161.
 Coleoptera, new South-western, 40.
Collops argutus, 186.
 " *aulicus*, 185.
 " *eximius* var. *floridanus*, n. var., 185.
 " *femoratus*, n. sp., 186.
 " new species of, 184.
 " *nigritus*, n. sp., 185.
 " *parvus*, n. sp., 185.
 " *punctulatus* var. *texanus*, n. var., 187.
 " *punctulatus* var. *utahensis*, n. var., 187.
 " *scutellatus*, n. sp., 186.
 " *similis*, n. sp., 187.
 " *sublimbatus*, n. sp., 187.
 " *tibialis*, n. sp., 186.
Coriscium cuculipennellum, 160.
Corixidae, new type of, 113.
 CRAWFORD, J. C., articles by, 359, 367.
Cremastochilus quadratus, n. sp., 43.
 CROSBY, C. R., articles by, 25, 365.
Cryptothrips junctus, n. sp., 139.
Diabrotica bertonii, n. sp., 15.
 " *bicincta*, n. sp., 58.
 " *boucardi*, n. sp., 12.
 " *cyaneo maculata*, n. sp., 61.
 " *cyaneo plagiata*, n. sp., 61.
 " *guyanensis*, n. sp., 15.
 " *henschi*, n. sp., 60.
 " *inconspicua*, n. sp., 13.
 " *marcapa*, n. sp., 60.
 " notes on, 12, 57.
 " *parambaensis*, n. sp., 13.
 " *quadrinotata*, n. sp., 57.
 " *stuarti*, n. sp., 59.
 " *subangulata*, n. sp., 14.
 " *thammi*, n. sp., 16.
Diaperis maculata floridana, n. var., 332.
Diastictis pallipennata, n. sp., 126.
Dielis fulvopilosa, n. sp., 200.
Dilophus stygius, 288.
Diphyllostoma nigricollis, n. sp., 42.
 Diptera, bred from cow manure, 180.
 Diptera of Baja California, 287.
 Discolia, table of species, 199.
 Division of Entomology, 267.
 DOD, F. H. WOLLEY, articles by, 33, 299.
Doryclus distendens, var. *varipennis*, 291.
 Dragonflies from Point Pelee and Pelee Island, 208.
Dryocates confusus, n. sp., 351.
 " *minutus*, n. sp., 352.
 " *pubescens*, n. sp., 350.
 EHLMANN, G. A., article by, 244.
Enallagma calverti, 259.
 " *civile*, 260.
 " *cyathigerum*, 259.
 " *ebrium*, 230.
 " *hageni*, 230.
 Entomological Society of America, Annual Meeting, 62.
 Entomological Society of Ontario, 220.
 Entomological Society of Ontario, Annual Meeting, 22.
 Entomological Society of Ontario, Montreal Branch, 178.
Epyzeuxis terrebralis, n. sp., 122.
Eriopyga antennata, n. sp., 21.
 " *dubia*, n. sp., 20.
 " *gigantoides*, n. sp., 21.
Eriosoma lanigera, 219.
 " notes on, 219.
Eristalis tricolor, 293.
Estigmene prima, life-history of, 221.

Delphacidae, new species of, 233.

- Ethopolys, characters of, 13.
 Euchætiæ spraguei, larval stages of, 190.
Eucymatoge penumbra, n. sp., 29.
Eupithecia scabrogata, n. sp., 28.
 " Taylor's types of, 270.
 " *vaporata*, n. sp., 28.
Eusapyga carolina, n. sp., 203.
Eustrotia bifasciata, n. sp., 218.
Euzophera strigalis, n. sp., 127.
 EVANS, J. D., article by, 196.

 FALL, H. C., article by, 40.
 Faunal Zones of N. America (map), 129.
 FELT, E. P., article by, 144.
 Fletcher Memorial Committee, report of, 63.
Fotella olivia, n. sp., 216.
 FROST, C. A., articles by, 245, 304.
Furcomyia andicola, n. sp., 362.
 " *argentina*, n. sp., 363.
 " *eiseni*, n. sp., 338.
 " *fumosa*, n. sp., 364.
 " *gloriosa*, n. sp., 337.
 " *insignifica*, n. sp., 363.
 " *knabi*, n. sp., 340.
 " *libertoides*, n. sp., 361.
 " *lutsi*, n. sp., 339.
 " new species of, 333, 361.
 " *omissa*, n. sp., 340.
 " *osterhouti*, n. sp., 335.
 " *reticulata*, n. sp., 334.
 " *simillima*, n. sp., 361.
 " *translucida*, n. sp., 336.
 FYLES, T. W., articles by, 282, 285.

 Geometrid notes, 164, 195.
 Geometridæ, new species of, 28.
 Geometridæ, Taylor's types of, 270.
 Geophagus, note on, 220.
 Geophiloidea from Iowa, 65.
 " table of families, 65.
Geophilus rubens, 66.
Geranomyia bezzii, n. sp., 205.
Geranomyia, a new Palearctic, 205.
Geranomyia, table of palæarctic species 206.
 GIBSON, ARTHUR, articles by, 64, 97.
 GIRAULT, A. A., articles by, 5, 49, 74, 88.
Glyptometopa eureka, n. sp., 202.
Gnathomerium umbraticum, 68.
Gnorimoschema septentrionella, 61.

Gnypeta atrolucens, 108.
 " *baltifera*, 107.
 " *bockiana*, 109.
 " *brevicornis*, 109.
 " *crebrepunctata*, 107.
 " *experta*, 107.
 " *floridana*, 109.
 " *harfordi*, 107.
 " *incrassata*, 109.
 " *laticollis*, 107.
 " *nigrella*, 103.
 " notes on, 105.
 " table of species, 111.
Gomphus externus, 260.
 " *notatus*, 261.
Gosibius, n. gen., 204.
Grossbeckia, n. gen., 125.
 " *semimaculata*, n. sp., 125.
Grotella parvipuncta, n. sp., 19.
 " *soror*, n. sp., 19.

Habrosyne rectangula, var. *arizonensis*, n. var., 124.
Hadenella cervoides, n. sp., 54.
Heliothis atheria, n. sp., 17.
 Hemiptera Heteroptera, records of captures of, 209.
 Hemiptera, Synonymy of Provancher Collection of, 318.
 Heteroptera, records of captures of, 209.
 HEWITT, C. G., articles by, 103, 128, 129, 242, 267, 332, 343, 347.
Homolazoa grotelliformis, n. sp., 92.
 " n. gen., 91.
 Homopterous insect, oldest American, 93.
 HOOD, J. S., article by, 137.
Hydriomena autumnalis, 225.
 " *autumnalis*, var. *columbiata*, 227.
 " *autumnalis*, var. *constricta*, 227.
 " *autumnalis*, var. *crokeri*, 227.
 " *autumnalis* var. *nigrescens*, 228.
 " *autumnalis*, var. *perfracta*, 228.
 " *californiata*, 229.
 " *glenwoodata*, 229.
 " *henshawii*, n. sp., 164.
 " *lanavahrata*, 229.
 " *magnificata*, 229.
 " Taylor's types of, 274.

- Hydriomena, transfigurata*, n. sp., 195, 228.
Hydriomena, two new species of, 164, 195.
Hymenoptera, notes on parasitic, 5.
Hymenorus granulatus, n. sp., 331.
Hyperaschra stragula, var. *ochreatea*, n. var., 124.
- Ichneumon nigricornis*, 365.
Illinoia macrosiphum, n. sp., 155.
Illinoia osmaroniae, n. sp., 153.
Insects bred from cow manure, 180.
International Congress of Entomology, 343, 369.
Ipidæ, new species of, 349.
Ips pilifrons, n. sp., 353.
Ischnoptera borealis, 171.
" pensylvanica, 171.
Itycorsia angulata, n. sp., 295.
- Lachnosterna carolina*, n. sp., 43.
Lachnus occidentalis, 193.
Lachnus pseudotsuga, n. sp., 302.
Lampyridæ, light - emission of American, 73, 309.
Lasiopteryx manihot, n. sp., 144.
Lecontea angulata, light-emission of, 311.
LEONARD, M. D., and ALEXANDER, C. P., article by, 205.
Lepidoptera, bred from cow manure, 184.
Lepidoptera from Yukon Territory, 213.
Lepidoptera, new N. American, 17, 52, 90, 122.
Lestes congener, 254.
" *disjunctus*, 255.
" *uncatus*, 254.
" *unguiculatus*, 254.
Leucania suavis, n. sp., 52.
Leucorrhinia borealis, 265.
" *glacialis*, 266.
" *hudsonica*, 266.
" *intacta*, 266.
" *proxima*, 266.
Libellula pulchella, 264.
" *quadrinaculata*, 263.
Liburnia dolera, n. sp., 240.
Linotenia chionophila, 68.
" *fulva*, 68.
Lithobiidæ, new genera of N. American, 173, 204.
- Lithocolletis betulivora*, 160.
" *martiella*, 160.
" *trinitella*, 159.
Lydidæ, new genera and species of, 294.
LYMAN, H. H., article by, 370.
Lyonetia latistrigella, 161.
- MCDERMOTT, F. A., articles by, 73, 309.
MCDUNNOUGH, J. H., and BARNES, WM., articles by, 17, 52, 90, 122, 132, 163, 188, 216, 270.
MACGILLIVRAY, A. D., articles by, 63, 294.
Macroxyela bicolor, n. sp., 294.
" *distincta*, n. sp., 295.
" *obsoleta*, n. sp., 294.
Mamestra cervina, 36.
" *columbia*, 36.
" *imbrifera*, 34.
" *invalida*, 39.
" *meodana*, 38.
" *mystica*, 34.
" *negussa*, 37.
" *neoterica*, 38.
" *nevadae*, 38.
" *segregata*, 37.
Megachile femorata, 354.
" *latimanus*, 354.
" *vernonensis*, n. sp., 354.
Melitæa alma, notes on, 102.
Merragata lacunifera, 31.
" table of species, 32.
Mesoleuca, Taylor's types of, 273.
Metopia lateralis, 170.
" *leucocephala*, 170.
Microphotus angustatus, 46.
" *decarthrus*, n. sp., 45.
" *dilatatus*, 46.
" *oecarthrus*, n. sp., 45.
" *rinconis*, n. sp., 44.
" *robustus*, 48.
" table of species, 46.
Mosquitoes, Bats, vs., 231.
Mymaridæ, European species in N. America, 88.
Myzus rhamni, 156.
- Næogeus*, characters of, 32.
Nehalennia irene, 255.
Neostyringomyia, n. sub. gen., 85.
Nepticula slingerlandella, life-history of, 25.
Noctuidæ, new species of, 216.

- Obituary—Rev. G. W. Taylor, 285.
 " J. B. Smith, 97.
 Odonata, of the Prairie Provinces, 253.
 Oedionychis, synonymical notes on, 365.
Oligia tonsa, ab. *fasciata*, n. ab., 55.
Ophiogomphus rupinsulensis, 260.
 " *severus*, 260.
Orthezia garryæ, 301.
Osmia novæscotiæ, n. sp., 355.
 " *subarctica*, n. sp., 357.
 " *tersula*, n. sp., 358.
Pachymerium ferrugineum, 67.
Paitobius, n. gen., 175.
Pamphilus dentatus, n. sp., 297.
 " *fletcheri*, n. sp., 298.
 " *transversa*, n. sp., 297.
Pangonia tepanica, 289.
Pantala hymenæa, 266.
Panurginus boylei, 368.
 " *nebrascensis*, 368.
 " *ornatipes*, 368.
Papaipema errans, n. sp., 56.
Papilio chromealus, n. sp., 244.
Papilio, new Central American, 244.
Paraleyrodes perseæ, 148.
Paraxyela, n. gen., 294.
Parexcelsa, n. gen., 100.
 " *ultraria*, n. sp., 100.
 PEARSALL, R. F., articles by, 28, 99.
Pediculus capitis, 103.
 " *vestimenti*, 103.
Perdita canadensis, n. sp., 360.
 " *citrinella*, 359.
Perigea orta, n. sp., 54.
Petrophora, Taylor's types of, 274.
Petropteron mirandum, n. gen., n. sp., 94.
Phenacoccus betheli, n. sp., 301.
 Philadelphia Academy, Centenary of Foundation of, 130.
Phileremulus mallochi, n. sp., 359.
 Phleothripidae, new N. American, 137.
Photinus castus, light emission of, 309.
Photinus castus, specific validity of, 312.
Photinus marginellus, light emission of, 309.
Phyllophila aleptivoides, n. sp., 217.
Physcus varicornis, 11.
Pissonotus binotatus, n. sp., 239.
 " *divaricatus*, n. sp., 236.
 " *foveatus*, n. sp., 234.
 " *guttatus*, n. sp., 233.
Pissonotus piceus, n. sp., 238.
 " *variegatus*, n. sp., 235.
Plecia bellardii, 289.
Pleuroprucha insulsaria, larva of, 369.
Poaphilus kevinus, n. sp., 70.
Pokabius, nom. n., 316.
 PRATT, F. C., article by, 180.
Priocnemis directa, n. sp., 197.
 " *minorata*, n. sp., 197.
 " *relicta*, n. sp., 198.
 " *semitincta*, n. sp., 197.
Prospaltella aurantii, 11.
Protoxyela, n. gen., 295.
 PROUT, L. B., article by, 369.
 Provincial Entomologist for Ontario, 267.
Quedius compransor, n. sp., 40.
Rachela pulcherraria, 270.
Ramphocorixa balanodis, n. gen., n. sp., 113.
Redingtonia alba, n. sp., 91.
 " n. gen., 91.
Rhaphiomidas xanthos, 291.
Rhopoideus fuscus, n. sp., 5.
Rileyia atra, light emission of, 311.
 " *punctata*, light emission of, 311.
 ROHWER, S. A., article by, 276.
 ROOT, F. M., article by, 208.
Saprinus illinoensis, n. sp., 161.
 Sawflies, some Canadian, 276.
 SCHAEFFER, C., article by, 184.
Schinia velutina, n. sp., 17.
Schizoneura lanigera, 219.
Scolia, table of species, 199.
Scolioidea, new, 197.
Scolipha, n. gen., 201.
 " *spilota*, n. sp., 201.
Senotainia trilineata, 3.
Smerinthus cerisyi, 299.
 " *ophthalmicus*, 299.
 SMITH, H. I., article by, 316.
Sogophagus, nom. n., 220.
Somatochlora albicincta, 263.
 " *macrotona*, 263.
 " *semicircularis*, 263.
Sonibius, n. gen., 177.
Soniphilus embius, n. sp., 69.
 SPOONER, C. S., article by, 233.
Stannodes ululata, n. sp., 99.

